

WHAT IS CLAIMED IS:

1. A gyricon display comprising:

- an arrangement of capsules, wherein each capsule comprises a bichromal ball having two hemispheres, wherein one of the hemispheres has at least a surface comprising a modified colored pigment having attached at least one organic group and the other hemisphere has at least a surface with a different color and different electrical properties, wherein each ball is enclosed within a shell wherein a liquid is present between the shell and ball so that the ball is free to rotate in response to an electrical field;
- first and second electrodes wherein said arrangement is located between said electrodes and wherein at least one of the electrodes is substantially visually transparent; and
- means for creating a potential difference between the two electrodes, wherein said potential difference causes said bichromal balls to rotate toward one of the electrodes.

15 2. ~~A visual display device or display media comprising an arrangement of~~ particles, wherein an optical response results from the rotation of said particles in a fluid, wherein a portion of said particles have attached at least one organic group having an ionic group, ionizable group, or both.

3. The gyricon display of claim 1, wherein said bichromal ball is said modified colored pigment.

20 4. The gyricon display of claim 1, wherein said bichromal ball comprises a pigment with at least one of said hemispheres comprising a surface containing said modified colored pigment.

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5. A capsule comprising a bichromal ball having two hemispheres, wherein one of the hemispheres has at least a surface comprising a modified colored pigment having attached at least one organic group and the other hemisphere has at least a surface with a different color and different electrical properties, wherein said ball is enclosed within a shell
5 wherein a liquid is present between the shell and ball so that the ball is free to rotate.

6. A capsule comprising a polychromal ball having two or more segments, wherein one of the segments comprises a modified colored pigment having attached at least one organic group and the other segment has a different color and different electrical properties, wherein said ball is enclosed within a shell wherein a liquid is present between the
10 shell and ball so that the ball is free to rotate.

7. A gyron display comprising:

a) an arrangement of capsules, wherein each capsule comprises a bichromal element having two segments, wherein one of the segments comprises a modified colored pigment having attached at least one organic group and the other segment has at least a
15 surface with a different color and different electrical properties, wherein each element is enclosed within a shell wherein a liquid is present between the shell and element so that the element is free to rotate in response to an electrical field;

b) first and second electrodes wherein said arrangement is located between said electrodes and wherein at least one of the electrodes is substantially visually
20 transparent; and

c) means for creating a potential difference between the two electrodes, wherein said potential difference causes said bichromal elements to rotate toward one of the electrodes.

8. The gyricon display of claim 7, wherein said bichromal element is a cylinder, a rod, a needle, a ball, or combinations thereof.

9. A gyricon display comprising:

(a) an arrangement of capsules, wherein each capsule comprises a 5 polychromal element having at least two segments, wherein one of the segments comprises a modified colored pigment having attached at least one organic group and the other segment has a different color and different electrical properties, wherein each element is enclosed within a shell wherein a liquid is present between the shell and element so that the element is free to rotate in response to an electrical field;

10 (b) first and second electrodes wherein said arrangement is located between said electrodes and wherein at least one of the electrodes is substantially visually transparent; and

(c) 15 means for creating a potential difference between the two electrodes, wherein said potential difference causes said polychromal elements to rotate toward one of the electrodes.

10. ~~A visual display device or display media comprising a) an arrangement of capsules, wherein an optical response results from the rotation of elements in a fluid within said capsule, wherein a portion of the elements comprises a modified colored pigment having attached at least one organic group having an ionic group, ionizable group, or both; and b) means to cause the controlled rotation of the elements to achieve said optical response.~~

11. A capsule comprising a bichromal element having two segments, wherein one of the segments comprises a modified colored pigment having attached at least one organic group and the other segment has at least a surface with a different color and

different electrical properties, wherein each element is enclosed within a shell wherein a liquid is present between the shell and the element so that the element is free to rotate.

12. A capsule comprising a polychromal element having at least two segments, wherein one of the segments comprises a modified colored pigment having attached at least 5 one organic group and the other segment has a different color and different electrical properties, wherein each element is enclosed within a shell wherein a liquid is present between the shell and the element so that the element is free to rotate.

13. The gyron display of claim 9, wherein said polychromal element is a cylinder, a rod, a needle, a ball, or combinations thereof.

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